
# Filing Receipt

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TO: Public Utility Commission of Texas

From: Recurve Analytics, Inc.

RE: Project No . 52373 - Review of Wholesale Electric Market Design

Recurve is an industry leader in meter-based demand flexibility. Recurve provides transparent, accessible analytics to track changes in consumption and demand due to program interventions for both individual buildings and in aggregate to support resource planning and facilitate performance-based transactions. We have consistently encouraged and supported market-based solutions for decarbonization around the United States that have the ability to scale and ensure demand-side resources can make a meaningful contribution to the grid. We support urgent action in Texas to bring new clean energy projects to mitigate the risk of capacity shortages and increase the availability of carbon-free energy at all times of day.

Recurve Analytics Inc. respectfully responds to the Commission staff request for written comment on Project No . 52313 - Review of Wholesale Electric Market Design. We are limiting our response to question number 5 as we have limited practical experience with existing programs in Texas, but a wealth of experience around the country optimizing demand-side resources. We offer a specific market access model, the Demand FLEXMarket, for bringing the value of maximum competition and flexibility to customers of Texas.

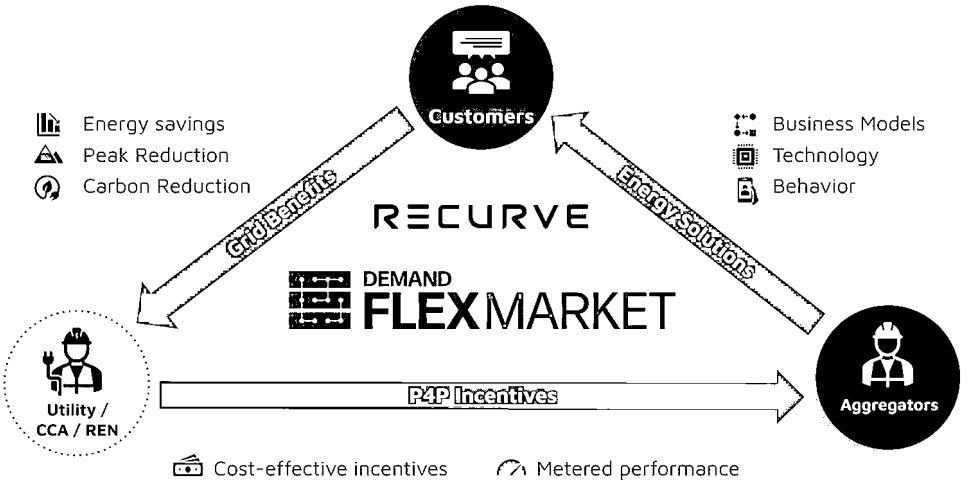
*5. What changes should be made to non-residential load-side products, programs, or what programs should be developed to support reliability in the future?*

1. **Identify any new program or modification to an existing program that could reduce demand or increase supply at net peak**

a. **General Program Design**

Recurve is pleased to present our response to the state of Texas request for comments. Recurve is accelerating the transition to a distributed, resilient, clean energy economy by supporting the full integration of demand-side resources into the energy grid. Recurve is proposing a Demand FLEXmarket solution that combines pay-for-performance with an open market of qualified aggregators delivering energy efficiency, load shifting, and demand response across the residential and commercial sectors.

The Demand FLEXmarket uses Recurve's platform and open-source industry-proven M&V tools to quantify energy savings at the specific AMI meter while converting actual MWh impacts into payable and claimable savings, all on an ongoing basis. This population meter-based program design will support the delivery of cost-effective savings and decarbonization to meet Texas' reliability goals while optimizing energy usage for residential and commercial customers.




The FLEXmarket model overcomes the traditional barriers to entry for qualified aggregators and validates the savings impacts for both end customers and the grid. This creates a tighter connection between program investments and the grid impacts that drive value for ratepayers including the following value streams:

- Maximizing energy savings delivered by aligning aggregator incentives with the desired outcome through performance-based compensation.
- Supporting resiliency by targeting customers with the highest potential for energy reductions and applying the right measures to deliver results.
- Improving the lives and livelihoods of the communities served through efficiency and effectiveness of service delivered by enabling aggregator business models best in line with specific customer needs.

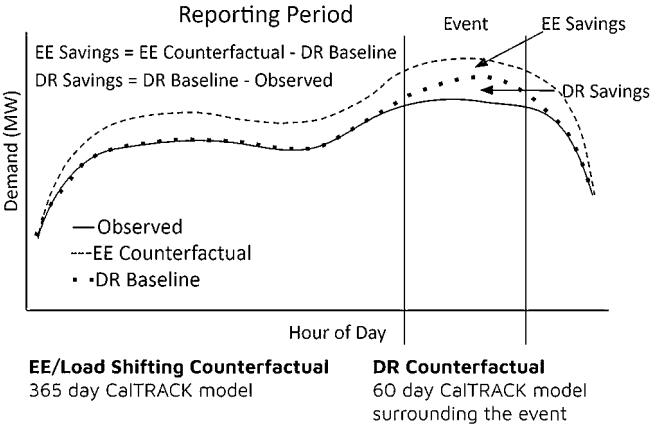
### i. Program Initiation and Responsiveness

The Demand FLEXmarket combines long-term energy assets and short-term controllable load shifting and demand response assets into a single VPP. Energy efficiency measures can be viewed as long-term, non-dispatchable virtual power plants, with load shifting and demand response taking the form of short-term virtual power plants with varying startup times.

Energy Efficiency projects are initiated upon enrollment/installation and are incentivized to deliver optimal load shapes based on an avoided cost curve[1]. Controllable load shifting and demand response projects can be installed alongside energy efficiency projects, or utilize existing infrastructure that adapts operation to deliver MWh reductions during peak hours. Ideally, routine load shifting windows are identified in advance, such as summer weekdays from 4-9 PM, with shorter-term demand response windows identified < 24 hours in advance. Program participants are notified through the Recurve platform and email notices to ensure event awareness.

[1] The avoided cost curve is simply the inverse of the cost of supplying energy at any hour of the day. Energy efficiency and demand response avoid those costs by shifting or reducing consumption.

Recurve's quantification methods identify and separate long-term energy efficiency impacts from short-term demand response impacts at the same meter through the use of long-term and short-term baselines. This allows for a separate incentive rate ($/MWh) to be used between long-term efficiency and short-term demand response.




### ii. Demand FLEXMarket delivers benefits during net peak

In addition to efficiency measures, there are many existing resources and energy service companies that have the capacity to shift load but do not have a reliable price signal to organize behind. A recent study by Berkeley Lab indicated that there are several GWH of existing load shifting potential waiting to be unlocked, with a large portion representing residential and commercial HVAC. A routine shift of this load has the potential to reduce day-to-day renewable curtailment and net peak at the same time.

### iii. Program performance requirements

Participants in the market are compensated based on metered energy savings throughout the year and during load shifting/demand response windows. Aggregators are not compensated until delivery of metered MWh savings. A goal of the program is to align incentives along the entire value chain. Aggregators are incentivized to deliver MWh savings, and Recurve is incentivized to recruit aggregators and projects, with a portion of the program administration budget based on results delivered.

### iv. Compensation structure

The compensation structure for this program involves paying aggregators for the reduction of load throughout the year and during peak hours. Energy efficiency projects are incentivized based on the avoided cost curve and cost-effectiveness requirements - if applicable. Load shifting projects are incentivized with a flat, long-term, and predictable $/MWh rate, with demand response events signaled with higher $/MWh incentives based on grid conditions. Aggregator load reductions and payments owed are tracked throughout the entire program in a transparent and auditable fashion. The program administration budget requires fixed cost components but is also structured to align with the amount of MWh reductions delivered.

### v. Measurement and Verification

The program utilizes open-source population Normalized Metered Energy Consumption (NMEC) methodologies for both energy efficiency projects and event-based load shifting and demand response. This is combined with the use of comparison groups to remove exogenous grid impacts (such as Flex Alerts or COVID-related behavior shifts).

Recurve's incoming data pipelines connect resource, dispatch, and site data to energy savings calculations to create portfolios of projects. An aggregated view provides a consistent metric of portfolio performance for each aggregator and the VPP as a whole. Recurve will receive meter data directly from load serving entities to perform M&V for each meter compared to the counterfactual baseline usage calculated using the CalTRACK methodology. This streamlines the meter data collection process and M&V methodology for the VPP as a whole so that aggregators can focus on dispatch and delivering results at the meter.

Recurve combines historical baseline creation with comparison group tracking through the GRIDmeter platform and methodology. This allows us to account for exogenous factors occurring on the grid that are not captured with a historical baseline by creating comparison groups that closely reflect customers enrolled in the program.

### b. Program marketing, outreach and education

The overall marketing, outreach, and education approach combines top-down awareness campaigns with bottom-up aggregator customer recruitment to maximize the customer pipeline. Many aggregators participating in Demand FLEXmarket are recruiting customers on a day-to-day basis, regardless of energy efficiency programs. The program is designed to tap into the existing aggregator recruitment flow and provide incentives for projects that provide grid value for total system benefit. Recurve supports aggregators in outreach efforts by analyzing meter data to identify customers that can deliver outsized impacts for certain measures. The identification of key load shapes will allow us to target individual customers that offer the most potential for grid services based on specific technologies and business models. Customers that exhibit high summer peak period usage and steep evening ramps will be of particular interest. In addition, Recurve will provide support with an awareness campaign to funnel end customers towards the program.

### c. Implementation Timeline

Upon notice to proceed, Recurve will begin work on platform setup, data transfer pipelines, and program documentation and requirements finalization. Recurve anticipates that this process can be completed within 8-16 weeks, depending on speed of data transfer. This leaves more than enough time to begin delivery of demand reduction to meet reliability needs in Summer 2022. The program setup process can be completed in parallel for multiple load-serving entities.

**Demand FLEXmarket**
*Indicative Project Timeline*

| TASK ID | TASK TITLE | START WEEK | DURATION (WEEKS) |
|---|---|---|---|
| | Program Kickoff | | |
| WP1.a | External Kickoff | 1 | 1 |
| WP1.a | Schedule Check In Meetings | 1 | 1 |
| WP1.a | Program Documentation and Requirements Review | 1 | 4 |
| WP1.a | Platform Setup | 2 | 1 |
| WP1.a | Data Transfer | 1 | 16 |
| WP1.a | Targeting Analysis | 16 | 8 |
| | Project Maintenance | | |
| WP1.e | Aggregator Recruitment - Ongoing | 16 | 49 |
| WP1.f | Monthly Portfolio Updates | 16 | 52 |
| WP1.g | Monthly Invoices | 20 | 52 |
| WP1.h | Final Settlement | 60 | 12 |

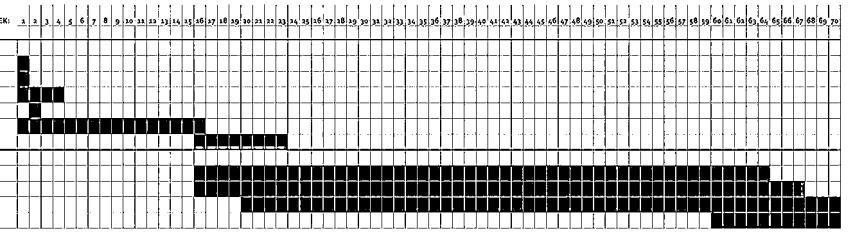



*Figure X: Indicative Demand FLEXmarket Schedule*

**d. Potential interaction with other existing programs (i.e., dual participation issues)**

This program navigates potential dual participation issues by performing eligibility checks as described above. Sites participating in this program cannot be participating in existing wholesale or retail programs.

e. **Prior similar program experience in Texas or elsewhere**

MCE Clean Energy has implemented an ongoing Demand FLEXmarket within their service territory that revolutionizes traditional programs in a way that guarantees cost-effectiveness and lowers energy usage during the most critical times for the grid. The MCE Demand FLEXmarket is currently focused on the commercial sector for energy efficiency, but there is also an ongoing load shifting and demand response component available to all sectors, including residential. Initially funded with a budget of $1 MUSD, the program budget was expanded to $5 MUSD annually due to encouraging project submission and pipeline flow.

With hourly tracking, MCE Clean Energy is able to incentivize participants based on time of day. A price signal tells aggregators exactly what energy savings during each hour of the year are worth. For example, energy savings between 4-9 PM in the summer can be valued over 3X compared to typical hours throughout the year.

The Demand FLEXmarket has been expanded to include demand response measures, integrating energy efficiency, load shifting, and demand response into a coherent price signal to the market. This leads to engagement from the most innovative technology providers and helps to address grid issues by flattening peak energy usage and reducing MCE Clean Energy's market exposure.

f. **Potential risks of proposal (e.g., delay, lack of participation, low megawatt contribution, etc.) with discussion of each potential risk**

A possible risk associated with Demand FLEXmarket is a slow project submission flow from aggregators that hampers the ability to meet program savings goals and deadlines. Recurve mitigates this risk by aligning our payment with aggregator project submission. This means that if aggregators are not submitting projects, a portion of Recurve's non-incentive budget is held back. Ultimately, Recurve is incentivized to motivate and coach aggregators in submitting projects, and aggregators are incentivized to maximize MW and MWh savings.

However, the Demand FLEXmarket directly address risks commonly associated with many traditional programs, including:

- Poor realization rates and impact evaluations.
- High administrative and project management costs, leading to small incentive pools.
- Rigid and prescriptive requirements that increase transaction cost and slow project flow.
- Struggle with scale as one implementer tackles an entire territory.

The Demand FLEXmarket inherently addresses many of these issues in the foundational design, including ongoing M&V, which enables enabling mid-program adjustments to influence performance metrics, low administrative costs increasing budgetary allocation for incentives, solution flexibility, and allowing for an open marketplace of qualified aggregators to ensure future scale can be achieved in-line with budget increases.

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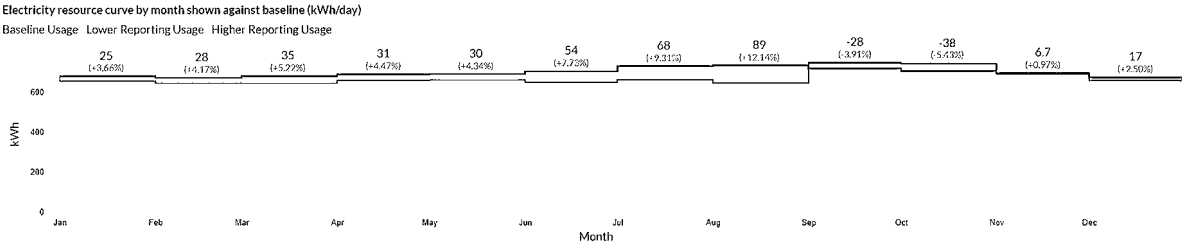
# Demand FLEXmarket Executive Summary

Recurve is pleased to present our response to the state of Texas request for comments.

The Demand FLEXmarket combines **pay-for-performance** with an open market of qualified aggregators delivering energy efficiency and demand flexibility solutions. Recurve provides revenue-grade meter level analytics and **open-source advanced M&V** to help utilities plan, procure and deploy Demand Flexibility and Energy Efficiency; this model empowers utility programs and market aggregators to innovate on the business models and technologies delivered to customers. The Recurve Platform provides a scalable solution for Population NMEC (Normalized Metered Energy Consumption) programs in which savings results are measured at the meter by detecting changes compared to past energy consumption.




For the purposes of the Demand FLEXmarket, an "aggregator" is defined as any market participant that is implementing demand flexibility projects with end customers and "aggregating" a portfolio of energy savings - examples include contractors, trade allies, and demand response providers. Traditional programs often involve a prescriptive set of measures or a large administrative burden for both the utility and the aggregator. Recurve streamlines program administration to **reduce transaction cost** and assign as much budget to incentives as possible. Since energy reduction is being measured at the meter, there is no need for prescriptive measure sets, and aggregators are able to **provide solutions that fit individual customer needs**.

The Demand FLEXmarket is built with these three principles in mind:

1. **Simplification:** Reduce or eliminate common technical and administrative barriers associated with traditional deemed and prescriptive pathways.
2. **Flexibility:** Allow aggregators to meet the needs of individual customers in terms of comfort, technology fit, and project cost.
3. **Scale:** Leverage a growing number of aggregators participating in the FLEXmarket by granting immediate access to future marketplaces after signing the initial Flexibility Purchase Agreement (FPA). To access new marketplaces, aggregators just need to accept the program M&V terms.